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Excavating the Iconic: The Rediscovery of the Fairbottom Bobs Colliery Pumping Engine

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Steam engines were one of the first machine-types to attract the attention of antiquarians and later Industrial Archaeologists. From the first Newcomen engine in 1712 to the 20th-century steam turbine, these objects still exert a fascination for archaeologists and historians of the Industrial Era. None more so than the Newcomen or more properly the atmospheric steam engine. Such engines were described by L.T.C. Rolt as one of the prehistoric forefathers of the Industrial Revolution period steam engine. Only a handful of examples remain standing today, and amongst the better known are engines from 1791 in the Science Museum in London; from 1787 still in situ *at Elsecar in Barnsley; the Coventry Canal Engine from Hawksbury; and Fairbottom Bobs from Ashton-under-Lyne, now in the Henry Ford Museum, Dearborn, Michigan.[1] Of these only the site of one, Fairbottom Bobs, has been the subject of modern excavation and historical study although it is in the nature of archaeological research that at the time of the site's excavation in 1999 the iconic status of this particular steam engine was not fully appreciated.*

Introduction

Fairbottom Bobs was a noted antiquarian site in the late 19th and early 20th centuries (Figure 1), the first article on the history of the engine appearing as early as 1894. During the 20th century the site was twice investigated. First, in 1929 the beam engine and its associated wagon boiler were donated to Henry Ford and dismantled and taken for re-erection at his Dearborn Museum in Michigan in the USA. This involved numbering each stone block, wooden beam, and cast-iron gearing fragment before packing and shipping, so as to allow the engine to be re-built (Figure 2). After this operation the chimney which exhausted the boiler was the only element of the site left above ground. Secondly, in 1982 concern for the condition of the chimney led to some restoration work and further excavation by the Manchester Region Industrial Archaeology Society (MRIAS) in order to see what had been left by Henry Ford. Their work demonstrated that the dismantling process in 1929 had left elements of the engine still *in situ* below ground. In 1999 and 2000 a third series of investigations took place as part of a wider investigation of the Park Bridge industrial landscape within the Medlock valley, east of Manchester.[2]

A Brief History of Coalmining at Fairbottom

The Lancashire Coalfield

Mining in the Medlock Valley around Fairbottom is recorded as early as 1636 (see below), although it was not until the middle of the 18th century that deep coal mine workings were sunk. These mines were part of the Lancashire coalfield, formed by exposed coal-bearing rocks that ran in a crescent from St Helens in the west, to Burnley in the north and Macclesfield in the south. This is an area of more than 800km^2 or 300 square miles, with coal deposits in some areas being more than 1,000m below ground.[3]

The expansion of coal mining across the Lancashire coal field was driven by a group of entrepreneur land owners. They were eager to exploit the mineral rights on their large estates during the 17th and early 18th centuries as coal superseded wood as the main fuel source in the region. By the middle of the 18th century coal mining had become a capital- and labour-intensive industry. The Lancashire coalfield was no exception with big landowners such as the Bradshaighs, Stamfords and Winstanleys providing access and capital, whilst a few families such as the Fletchers and Lees provided the technical expertise. The first recorded use of a water pumping engine in a Lancashire mine was at Whiston by Henry Ashton, according to his will of 1668. Whiston was also the site of the first attested Newcomen steam engine on the Lancashire coalfield in 1716, just four years after the first one in Dudley, and 19 more are recorded by 1775.[4]

During the early and mid-19th century there was a great expansion in coal production and hundreds of shafts were dug across the Lancashire coalfield as production rose from 1.4 million tonnes in 1800 to 9.6 million tonnes by 1850. By this date individual shafts were being grouped together to form collieries and nationally the number of collieries peaked at 3,307 in 1880, whilst in the Lancashire coalfield there were 480 collieries at this date. Thereafter, the industry both in Lancashire and nationally continued to grow in terms of the absolute output of coal, output

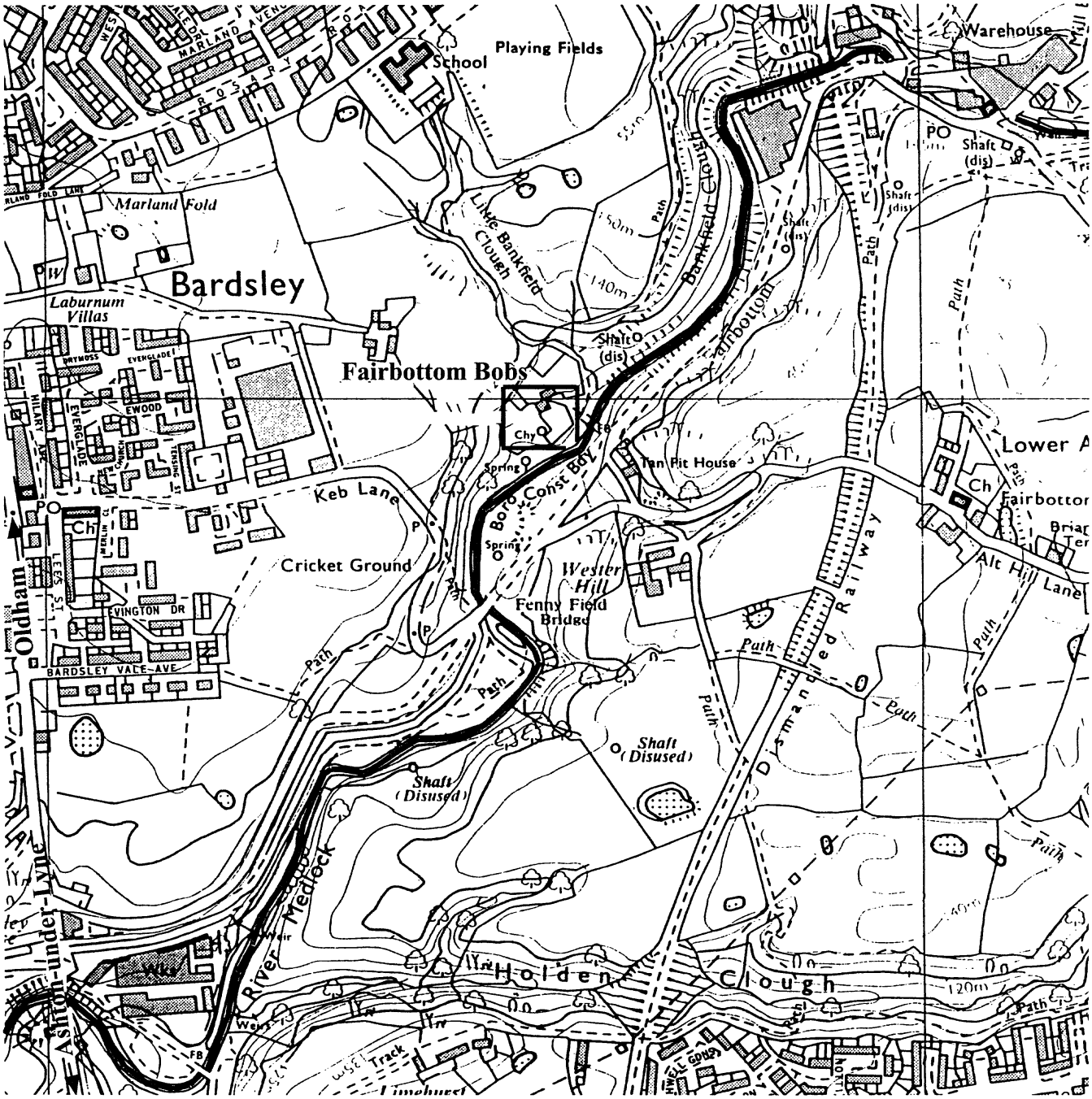


Figure 1.
Site location map.
Based on OS 10,000, sheet SD90SW.

in Lancashire rising to 28.7 million tonnes in 1900 and peaking in 1907, though the number of collieries and employees dropped steadily after 1880 as mechanisation and new deep mining technology brought economies of scale.

The Fairbottom Colliery Company

The exposed coal seams along the Medlock Valley probably attracted small-scale working around Park Bridge long before the first records were made. The earliest record can be found in the manorial papers for Ashton-under-Lyne in 1636 where there is a comment that 'whoever goeth to Aulte [Alt] Colepitt through Nicholas Hyde's Ground shall shutt the yates after him'. Hyde's tenement was at Alt Hill to the south-east of Park Bridge above Rocher Vale. Whilst in February 1674 there is a reference in the Ashton Parish Registers to an Elisha Knott who was 'killed in a coal pitt att Fairebotham' (Fairbottom).[5] However, serious commercial exploitation only began in this part of the valley during the middle of the 18th century with the sinking of the first deep mine shaft at Fairbottom Bobs on land owned by the Earls of Stamford. The siting of the earliest shaft at this point in the valley was probably for two reasons. First, the boulder clay over the bedrock was relatively shallow here, at around 2.0m as

opposed to tens of metres in other areas. Secondly, there was a ready supply of clean water from local springs, the use of which caused less furring in the cylinder and boiler of the pumping engine than re-used water from the mine.

The early history of the Fairbottom Bobs site is unclear, even the origins of the name of the site are debatable. Some suggest it was named after Bob, the occupant of one the cottages on the site in whose garden the engine stood after the mine at Fairbottom was abandoned. Yet it is more likely that, as with many other beam engines, the name element 'Bobs' derived from the up and down action the beam made when it was working.

It has been suggested by the Henry Ford Museum in the USA that the Newcomen steam engine at Fairbottom was re-used from an earlier site. The evidence for this is two fold. First, there is an advert in the *Manchester Mercury* for the 9 October 1764. Here there is a notice for the sale of a 'Fire Engine' (as steam engines were then sometimes called) at the Norbury Coal Works some nine miles from Fairbottom. This engine was being replaced by a more powerful one and the specifications for the cylinder and performance of the engine to be sold were given. Secondly, these dimensions almost exactly match those of the cylinder (28in. in diameter) and engine at Fairbottom Bobs. Many early steam engines were re-used since they were such expensive technology, so this suggestion is not impossible. To this circumstantial evidence can now be added an oblique reference in the Stamford archives from 1765 mentioning a colliery operating at Bardsley in the parish of Ashton which 'supplied the greater part of Manchester'.[6] Since Fairbottom Bobs lies within the Bardsley area of Ashton and this is the earliest colliery known in this part of the parish, the likelihood is high that this is a reference to the site at Fairbottom. Even so, the Ashton estate map drawn in 1765 fails to show the mine, or any others in the parish, although intriguingly the field within which the site stands is called Bobcroft on this map, possibly implying that the engine was here at that date.

The earliest positive date for the mine and steam engine comes from an iron chisel or wedge excavated from the drain leading from the ash pit. This had cast into one side the coat of arms of the Earl of Stamford and the date 1776.

According to manorial accounts for Ashton-under-Lyne, the rents from coal production in the years 1758–9, 1768–9, and 1775 were each £21, but by 1785 this figure had leapt to £827 14*s.* 1*d.* The leases attached to these pits by the Earls of Stamford were very similar. They allowed the digging of pits, soughs, trenches, and other holes, but not

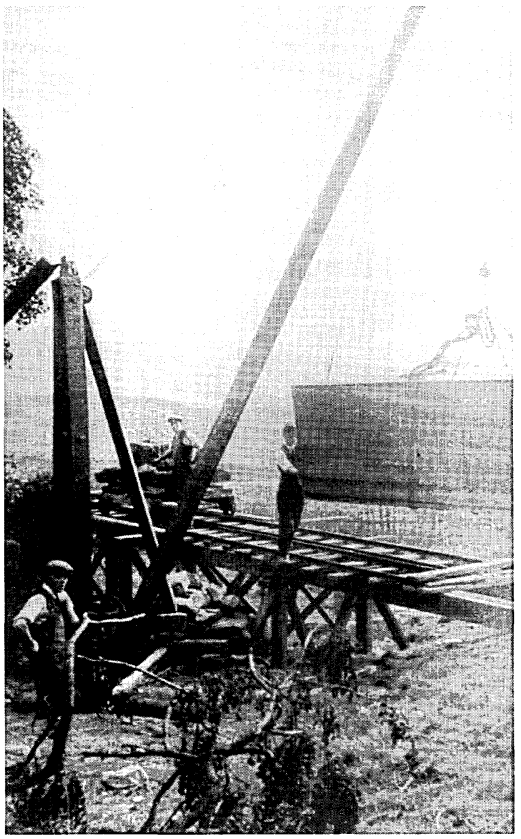


Figure 2.
Henry Ford's men prepare to transport a crate carrying part of the engine across the river Medlock.

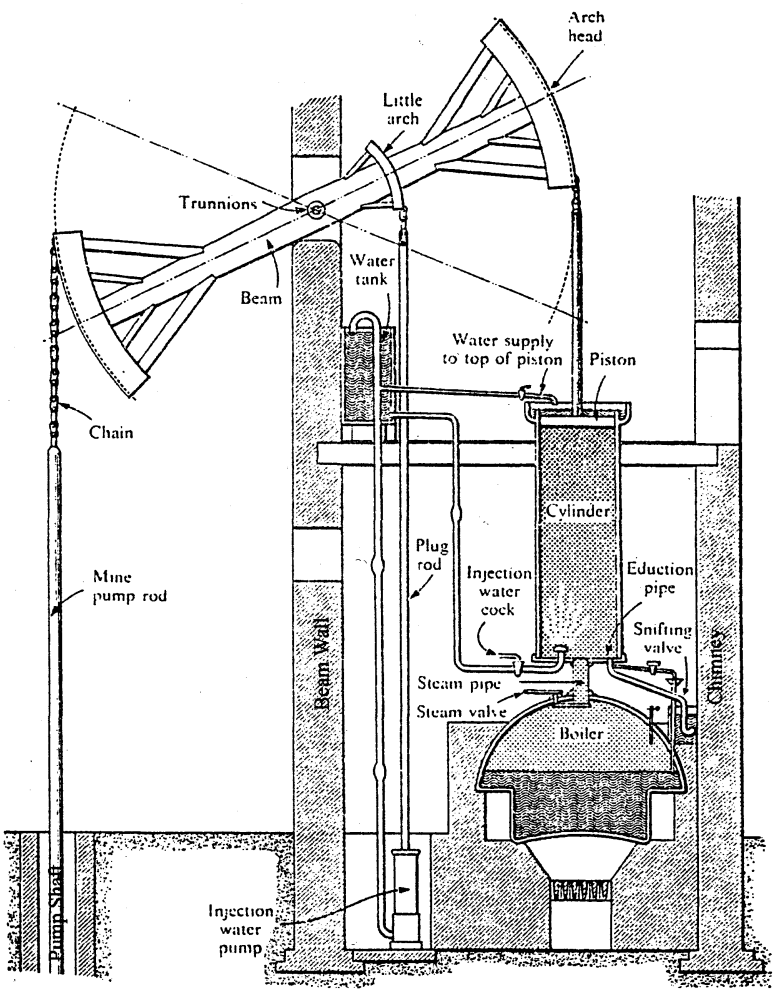


Figure 3.
Schematic diagram showing the elements of an atmospheric engine.

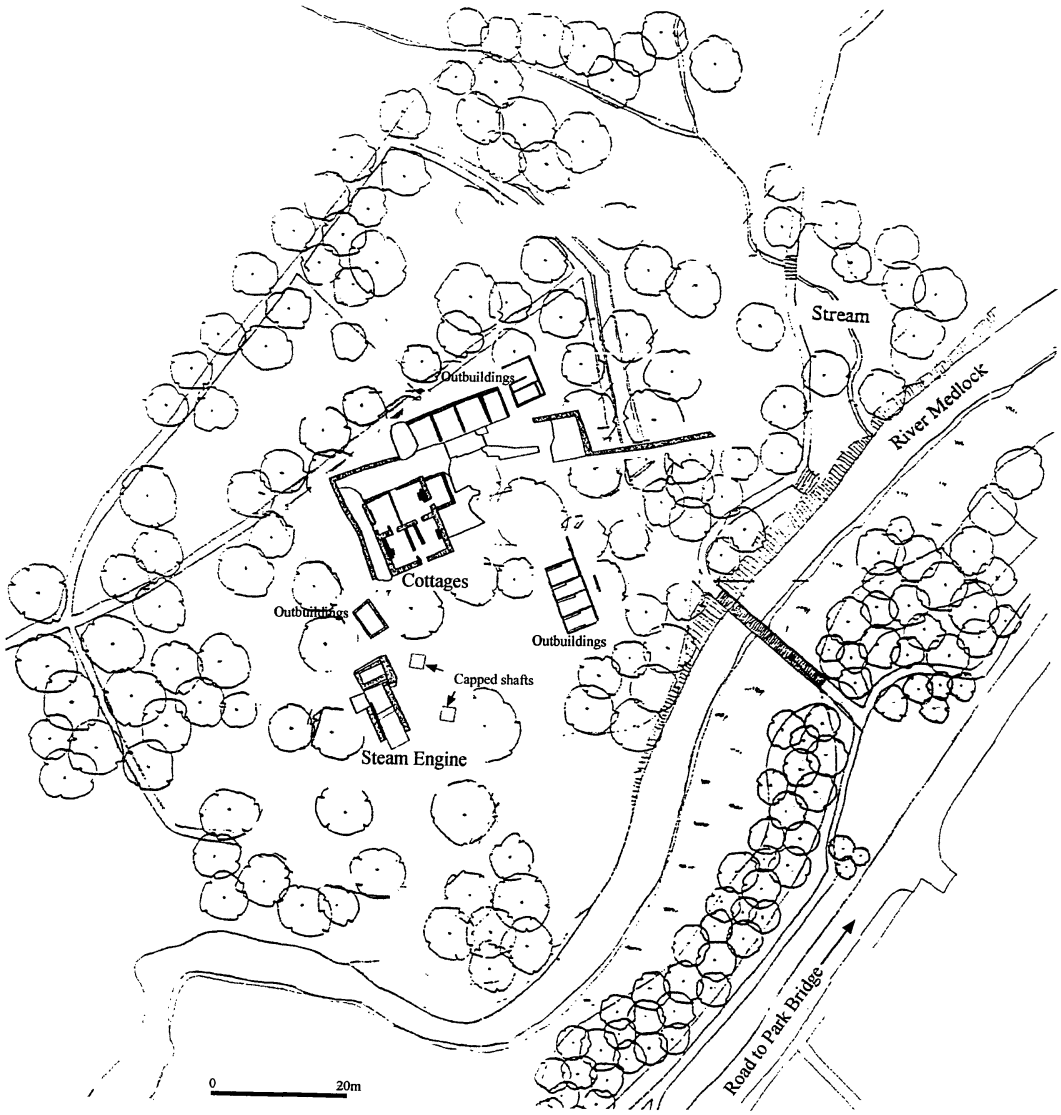


Figure 4.
The site of the excavations, showing the position of the various structures.

within 70 yards of any building.[7] The Earls appear to have been more than passive landholders renting land to speculative mine engineers, for in 1785 the Saltersbrook turnpike trust agreed to 'accommodate the Earl of Stamford in his plan for a "wagon" road from his Lordships collieries to Newton Heath on reasonable terms'.[8] Newton Heath was a township that lay on the northern bank of the River Medlock about 4km north-east of Manchester. Any road from Bardsley or Fairbottom to Manchester would have had to pass through Newton Heath, so it seems likely that this refers to the collieries around this area.

It seems likely that the Lees family, who ran the Fairbottom Colliery Company in the 19th century, were associated with the collieries in the Medlock Valley soon after the opening up of Fairbottom Bobs. One of the reasons given for building the Fairbottom branch of the Ashton Canal was to provide access to the mines there and at Werneth in Oldham, 3km to the north of Fairbottom. Amongst the major shareholders were James and John Lees of the Chamber Colliery Company in Werneth, Oldham.[9] In 1799 the Earl's steward in Ashton, Mr Worthington, wrote concerning a proposal for transferring the colliery lease from John Lees to James Lees, Joseph Lees, John Booth, Joseph Jones and John Lees of Werneth Colliery in Oldham for £1,200 per annum.[10] It is thus likely that the Fairbottom Colliery Company was founded at this date. A further document from later that year indicates that it was necessary to keep the Fairbottom steam engine running to drain several pits including those around Hurst.[11]

The earliest direct reference to Fairbottom Bobs can be found in a document from 1801 relating to the Ashton Canal Company. In that year the Fairbottom Colliery Company approached the Ashton Canal Company seeking help to renew their pumping machinery. Water was being pumped from that mine into the branch of their canal which ran from Bardsley to Fennyfield Bridge just 200m

south of Fairbottom Bobs. This helped maintain the water levels in the canal and the colliery company felt it was reasonable for the canal company to contribute to the cost of maintaining the pumping operation. On 4 September a Mr Sherratt was asked to view the machinery and works at Fairbottom belonging to the colliery and 'to ascertain the cost of erecting new machinery there and to estimate the cost thereof to this company, bearing in mind the decaying state of the machinery'.[12] The documents do not reveal whether the new machinery was installed, although the archaeology strongly suggests this was the case. It is also possible that the Mr Sherratt mentioned was William Sherratt the engineer and partner in Bateman and Sherratt's engineering works in Manchester, who specialised in building steam engines.

By 1811 the colliery was being referred to as the Fairbottom Pits, suggesting some expansion, perhaps northwards up the valley, for a lease also mentions the problem of protecting building land under which the coal lay, as it was 'likely there after to be built upon'.[13] This sounds like the lands around the Park Bridge Ironworks and is indirect evidence suggesting that the nearby Rocher Vale Colliery was being worked by the company at this date.

Fairbottom Bobs' role as a pumping engine for several other mines and as a water supply for the Ashton Canal kept it going until the 1820s, and the suspicion is that this was long after the coal was viable in this mine. It is mentioned, along with Rocher Vale, by James Butterworth in 1823.[14] However, the engine may have ceased around 1826 for in that year there was no profit distribution from this mine to the company's shareholders. Also by the 1820s the company was operating new profitable pits further up the Medlock Valley at Rocher Vale.

The earliest attested date for the Rocher Collieries is 1804 when an article in the *Manchester Chronicle* dated 17 November. This recorded that

> A man in Rocher Vale in Alt, near Ashton-under-Lyne, viewing the steam engine and coal works, on Sunday last, by the springing of the board, was precipitated headlong down the pit; but pitched upon a cross beam, and there hung by his hands till providentially raised from his perilous situation by one of the workmen.

Whilst this shows that there was a steam engine here by that date, it is not certain if this pit was the Rocher New Colliery that survives today, since Rocher Old Colliery lies further up the valley. There is a surviving engine house at the New Colliery site which may be the one referred to. There is also a leat to the north of this engine house which may link to it by underground pipes, some of which were discovered during the excavations. Joseph Isaac Newton writing in 1904 states that one of these collieries had a water wheel which assisted a steam engine in pumping.[15] It is not clear whether this leat powered a water wheel or only provided clean water to the steam

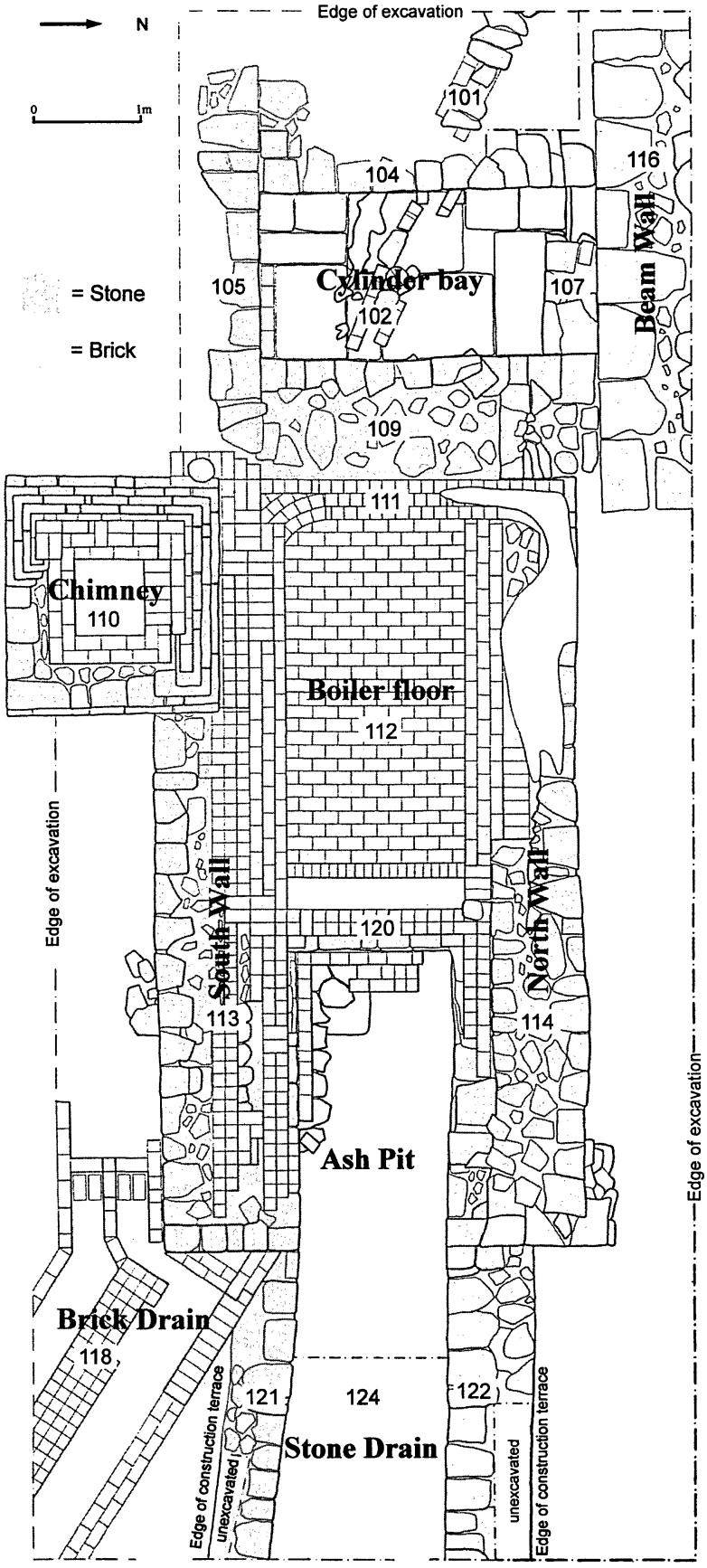
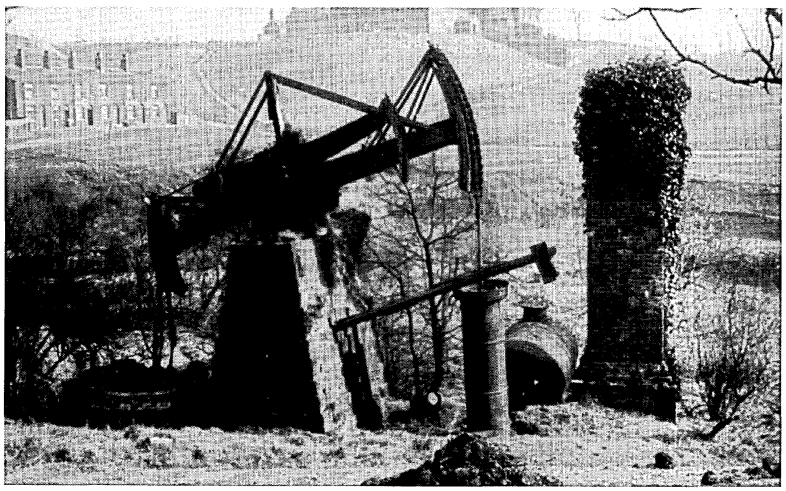


Figure 5.
Site plan of structural elements revealed by 1999/2000 excavation with context numbers.



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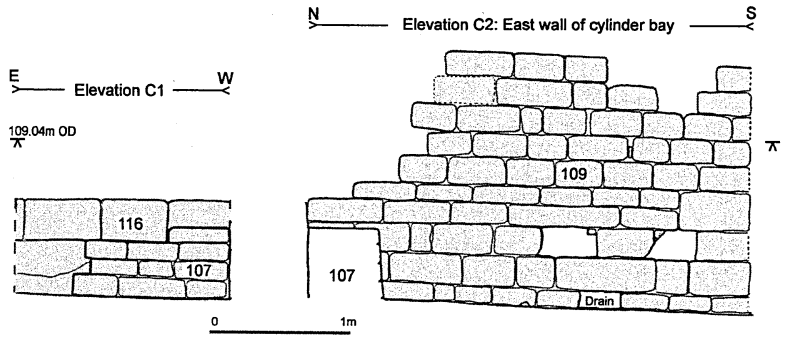

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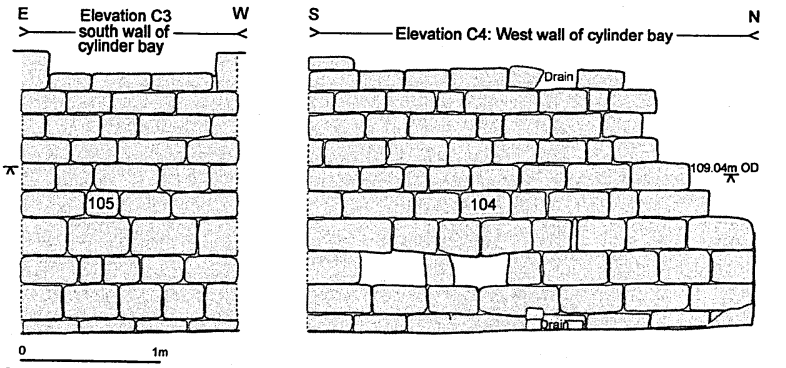

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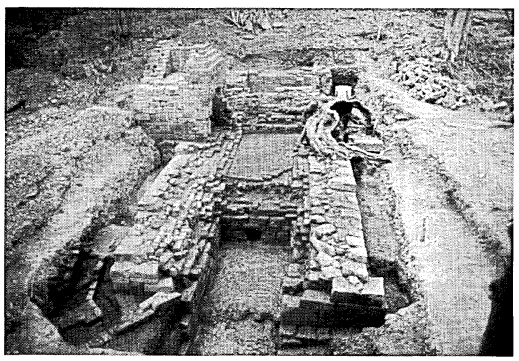
Figure 6.
A late 19th-century photograph of the engine and boiler.

Figure 7.
East wall of the cylinder bay.

Figure 8.
South and west walls of the cylinder bay.

Figure 9.
A view of the site showing the location of the boiler.



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engine. It was probably around 1804 that the horse-drawn tramway shown on the *c.* 1800 annotated Ashton estate map was extended to run to Rocher New Colliery.

Ledgers from the Stamford Estate in the Lancashire Record Office mention Rocher Bye Pit and Rocher New Engine Pit in 1818, whilst in 1820 there is a reference to Rocher Pickford Wood Pit. An indication of the extent of the workings is given in 1834. In that year an inquiry was held by the Earl's steward into the potential danger of contaminating Ashton's spring water supply due to new workings proposed by Mr Kenworthy of the Fairbottom Colliery Company.[16] Ashton lay several miles to the south of Rocher vale and Park Bridge.

Edwin Butterworth records 25 shafts in this part of the Medlock Valley by 1842, including collieries at Bardsley, Hurst, Park Bridge, Rocher, and Wood Park mostly run by Messrs Lees, Jones & Company of Oldham. These employed around 800 people and produced over 20,000 tons of coal each year.[17]

In 1861 sidings were built from the newly opened Oldham, Ashton and Guide Bridge Railway to Rocher New Pit and steam introduced onto the narrow gauge tramway. During the 1870s mining began to decline in this part of the valley. The tramway appears to have closed in the middle years of the decade and in 1877 the equipment and site of Fairbottom Colliery and Tan Pit Colliery on the opposite side of the River Medlock were sold[18] probably to the Lees family since in the Ashton Rate Books for 1914 both are owned by Maurice Lees. In 1887 Rocher New Pit closed, the last working mine in the Park Bridge area.[19]

The Remains of Fairbottom Bobs

Fairbottom Bobs was a Newcomen-type atmospheric engine (Figure 3) and was used to pump water from the Fairbottom Colliery Company's mine. These remains, which include not just the engine but also the boiler house and associated cottages and stables, lie on the northern bank of the River Medlock on a terrace 108m above sea level, and *c.* 2m above the present level of the river (Figure 4).

The latest excavations in 1999–2000 exposed the remains of several structural elements associated with the beam engine which represent later consolidation (Figure 5).

This complex structure appears to have had one major phase of construction, although excavations in 2000 revealed indications that the beam engine had at some time been altered, repaired, and modernised. Guided by the standing remains of the chimney and the records of the 1982 excavation by MRIAS, work in 2000 revealed substantial remains of all the key structures associated with the beam engine.[20] These included remains of the cylinder bay, beam wall, ash pit, drains, the boiler walls, and floor. As with many early engines it does not appear that the beam engine was housed in a roofed structure. However all the external walls of these

elements and many of the internal ones were built in the same style with fine ashlar blocks.

The cylinder bay measured 1.75m × 3.20m and survived up to 10 courses or 2m deep. When the engine was dismantled in 1929 the records show that the cylinder had a diameter of 28in. Late 19th-century photographs appear to show the cylinder with its base at the level of the top course of stones (Figure 6). If these photographs show it in its true position then there must have been some sort of structure beneath to hold it in place. There were gaps in the eastern and western walls of the bay which could have been settings for timber or iron beams but as these are 1.25m below the top of the walls something must have filled the space between them (Figures 7 and 8). One possibility is that the valves and gears necessary for operating the engine were located here. The engine and its boiler would have required large amounts of water and it might be that the space below the cylinder acted as a reservoir with the cylinder sitting on a structure, or plinth supported on beams running between the east and west walls. In contrast to the ashlar masonry of most of the cylinder bay, two rough stone and brick drains ran into and across it. The rough stone drain emerged from the hillside and ended by replacing one of the top course stones of the cylinder pit. Running across the floor of the bay were the remains of a brick drain which issued via an opening in the base of the east wall of the cylinder bay. It then ran beneath the boiler floor and issued into the ash pit. The nature of these drains suggests that they were a later addition. Cylinders and boilers would last longer and perform more efficiently if clean water was used and the drains seem to have been added to provide the engine with a supply of spring water from the hillside above.

It was found that the base of the beam wall had survived the dismantling process in 1929. Two courses of finely dressed stone survived to a height of 0.65m. This represented the southern outer face of the beam wall which was 4.40m long and 0.50m wide. The full width of the beam wall could not be revealed due to the concrete capping of the pumping shaft associated with the engine. However, excavation did reveal that within this outer shell of ashlar masonry the bulk of the massive beam wall was made up of tightly packed stone rubble.

The chimney base, boiler house, and stone drain running to the east of the site appear to be contemporary with the cylinder bay and beam wall. The site of the boiler lay immediately east of the cylinder bay in an area of brick flooring 2m × 3.3m. Excavation revealed that part of the walling around this area was curved (Figure 9). This was probably because it was originally built around a domed, circular, boiler. These were called haystack boilers because of their similarity in shape to old haystacks. After 1795 this type of boiler was being replaced by the larger, more efficient, wagon boiler, so called because it resembled a covered wagon. This is the type of boiler that is shown on all the old photographs of the engine and the one removed in 1929 (Figure 5). Engine boilers

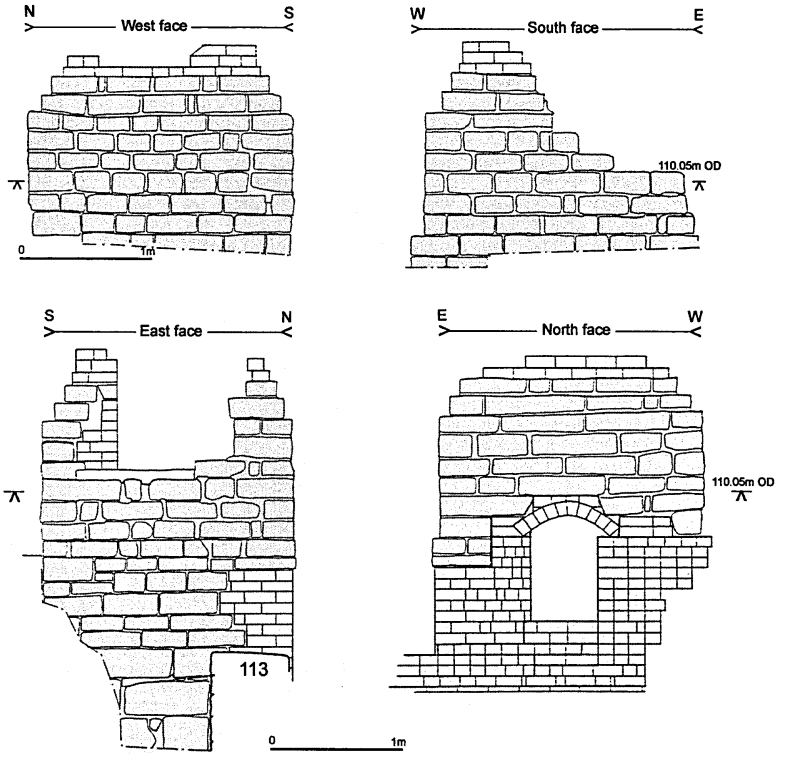

Figure 10.
The four faces of the chimney.

Figure 11.
The stone drain at the eastern end of the site.

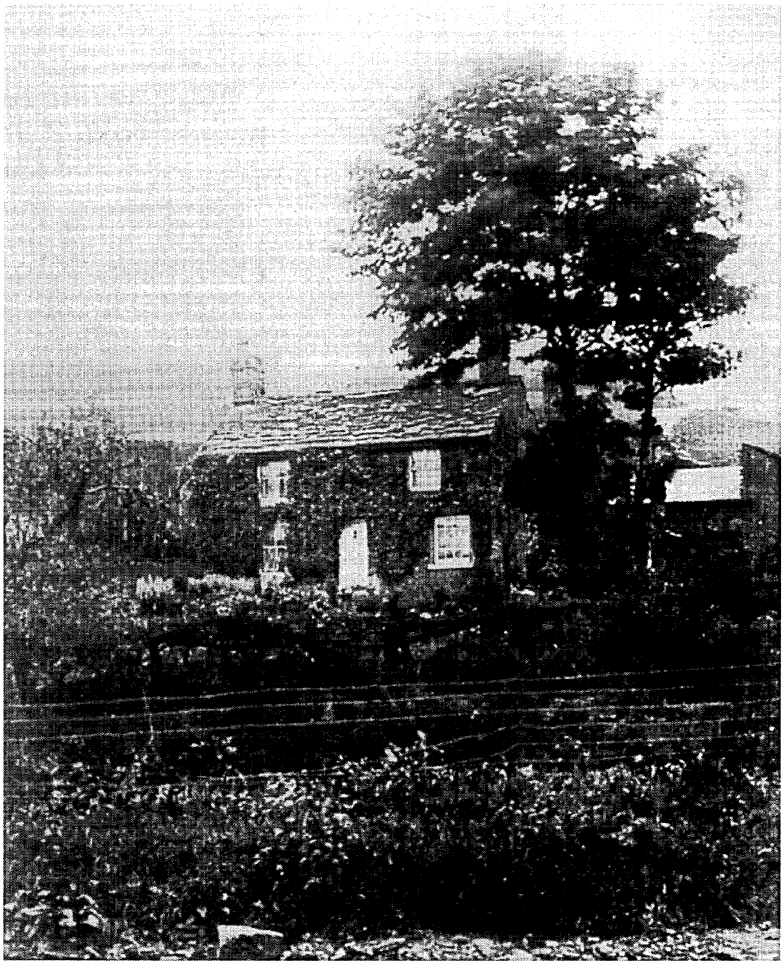

Figure 12.
A 19th-century photograph of Fairbottom Cottages.

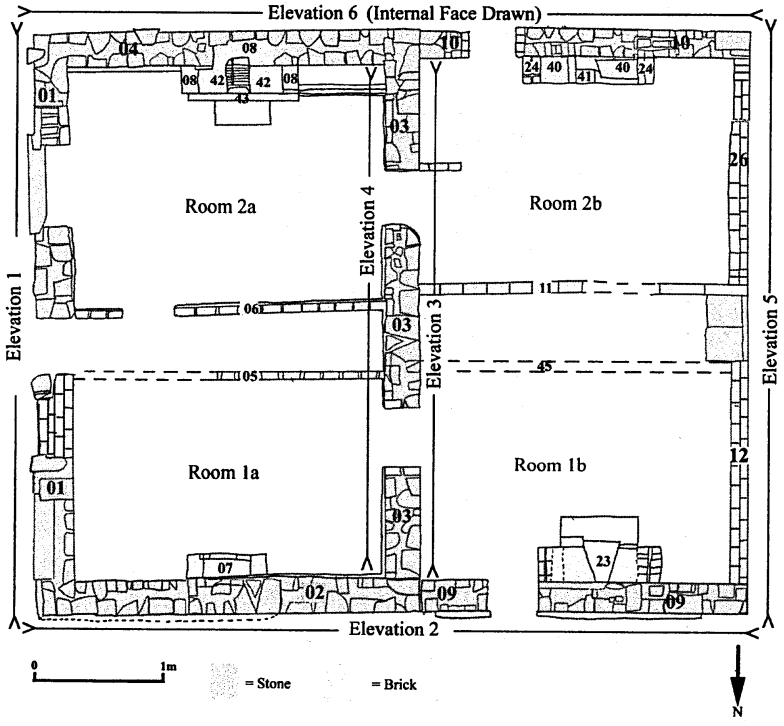

Figure 13.
Plan of Fairbottom Cottages.

did not have a very long life span and it seems that some time after 1795 a decision was taken to invest in new technology and provide the engine at Fairbottom Bobs with a new, improved boiler.

The larger size and new shape of the replacement would have required modifications to some of the engine's structures; for instance the boiler house floor would have needed enlarging and perhaps the current brick floor is a replacement for an earlier stone one. In the south-western corner of the boiler house were the stone foundations of a square chimney, roughly 2m × 2m in plan. There was evidence that the original position of the flue, which took smoke and gases from the boiler, had been altered by the insertion of a brick replacement most likely to accommodate the design of the new wagon boiler (Figure 10).

At the eastern end of the boiler house was the ash pit. As elsewhere, the majority of this structure was built in high quality stonework. However, it seems that the internal sections of the upper courses of its walls were rebuilt in brick. The boiler would have needed tending and stoking from a working area represented by the ash pit. Recesses in the brick work at the top of the ash pit wall suggest that it was constructed to take a plank floor, suspended over the ash pit itself, from which workers could operate the new boiler. Ash and cinder from the boiler would be raked out and dropped in to this ash pit. Water from the cylinder bay drain would have helped wash this material into a large ashlar stone drain which ran eastwards to the River Medlock (Figure 11). The majority of the force needed to flush this material seems to have come from channelled spring water which flowed into the base of the ash pit through an arched opening in the stone wall. At some time this system seems to have become redundant as the opening had been bricked up. Excavation of part of the stone drain revealed extensive silt deposits. At the base of these deposits fragments of planks preserved by the waterlogged conditions were found. Another find was an iron chisel or wedge with the date 1776 stamped on it. At some time it seems that the stone drain was replaced by a double brick drain. This was built at a higher level and ran to join the river further downstream than the stone drain. It is possible that silting and a rise in water level had greatly reduced the efficiency of the stone drain and that the construction of the new drain, with a steeper gradient, was intended to restore the efficiency of the drainage system. As it would be no longer needed it is likely that the blocking of the arched opening in the ash pit wall was contemporary with the construction of these new brick drains.

Phaseology

The excavations revealed two significant phases of activity on the site. All the major elements of the beam engine, the hay stack boiler, chimney, cylinder pit and beam wall, were constructed at the same time, making extensive use of stone and ashlar blocks, possibly as early as 1764/5, but it was certainly operating in the 1770s as indicated by the excavation of the iron chisel from the ash pit with its date of 1776. Later, there was a major expansion of the boiler area when the hay stack boiler was replaced by a wagon boiler. There were also other major alterations to the engine itself although it is impossible to say whether these all occurred at the same time. These alterations appear to be represented, however, by the use of hand made brick. Taken together they represent a considerable investment probably in an attempt to modernise and extend the working life of the engine. It seems likely that this refurbishment was a response associated with the request of the Fairbottom Colliery Company for money from the Ashton Canal Company towards restoration and repair of the beam engine in 1801. The renovations appear to have worked as it seems that Fairbottom Bobs continued pumping for another 20 years.

The Remains of Fairbottom Cottages

Lying around 15m to the north-east of Fairbottom Bobs are the remains of a set of two stone- and brick-built cottages.[21] These comprised two phases.

First, the initial building was a single stone house. This was two storeys high, 6m × 10m in plan, and 120m^2 in area, with two rooms on the ground floor and two on the first floor. The front elevation comprised watershot stone with quoining at the corners and around an off-set doorway. This doorway opened directly onto the northern room, whilst there was a fireplace in each room. Finds of pottery from the house suggested a construction date in the late 18th or early 19th century. This was supported by the style of the building, particularly the stone-work which was similar to that seen in the construction of the steam engine. It thus seems very likely that the cottage was built at the same time — that is, either during the 1760s or the 1770s, perhaps as the engine driver's house for the beam engine. Probably shortly after this date the range of brick stables to the north-east of the cottages was added (Figure 12).

Secondly, a major change in the life of the building occurred in the mid-19th century with the expansion of the cottage. A two-storey, four-roomed wing was added to the western elevation in handmade brick and stone. At the same time this enlarged

Figure 14. The reconstructed engine in Dearborn.

structure was divided into two cottages, with the southern two rooms forming one house and the northern two rooms the second. This necessitated the blocking of the original northern entrance, which was replaced by a new doorway in the southern room of the southern house (Figure 13). The map and Census Return evidence for the period 1847–1871 seems to point to a construction date for the extension between 1850 and 1870, well after the abandonment of Fairbottom Bobs.

One of the striking features of the excavation was an absence of pottery finds. No pottery from before the 20th century was excavated. There were other finds. Although not vast in number, including iron work and the remains of thick stone roofing flags (probably from the primary late 18th-century phase of the cottages) and slate roofing tiles (which must post-date the arrival of the railway in the valley in 1860). In part the paucity of finds was because the site was only partially excavated ahead of consolidation and display. However, the lack of early material might suggest that the household waste was disposed of elsewhere on the site.

It is not known who occupied the house in the late 18th and early 19th centuries. The earliest family associated with the house were the Newtons who occur in the census returns for 1841 and 1851 as living in a house on Bobbs Lane. In 1851 Joseph Newton was described as a 'manager of coalworks', and it is likely that he worked for the Fairbottom Colliery Company, although not at Fairbottom Bobs. By 1861 the Gerrards were living here and in 1871 the Huttons and Maidens, neither family being involved in coal mining. The two cottages remained occupied until they were demolished in the 1970s.

The Importance of the Fairbottom Bobs Remains

The study of the archaeology of the steam engine was central to the growth of early industrial archaeology studies.[21] The development of the coal industry played a crucial role in the emergence of the stem engine and understandably 18th-century colliery beam engines have received extensive attention from archaeologists. Fairbottom Bobs was

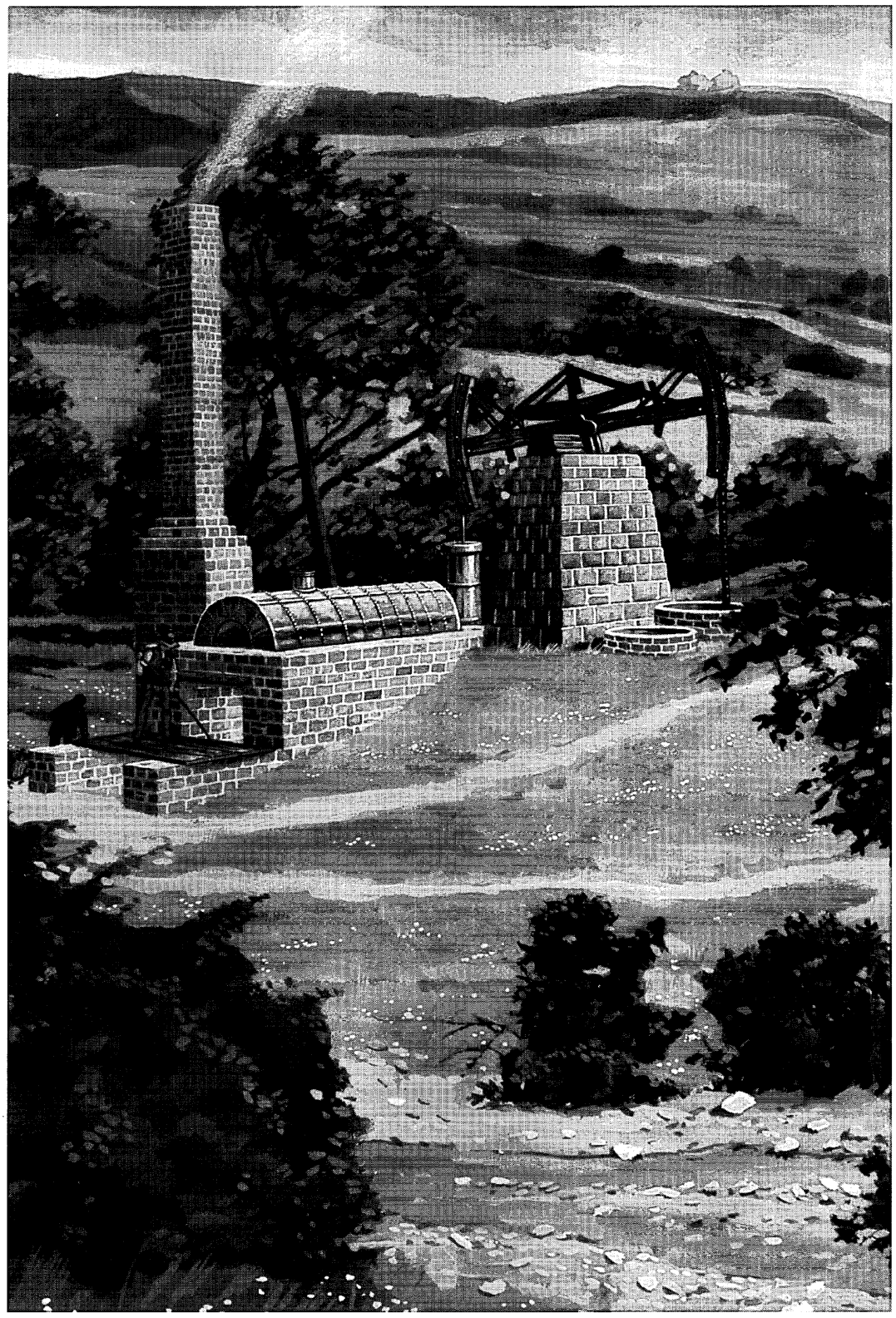

Figure 15.
A reconstruction painting by Graham Sumner of the engine (detail) (Copyright University of Manchester).

itself the object of antiquarian interest from 1894 onwards when an article on the antiquity and rarity of this Newcomen steam engine appeared in the *Engineering Magazine*. This interest culminated in the donation of the engine to Henry Ford's museum at Dearborn, Michigan, USA, in 1929 and where the reconstructed engine can still be seen today (Figure 14).[23] Such an early example of industrial archaeology conservation shows that by the mid-20th century there was already an awareness that atmospheric engines had an important place not only in the development of the technology of the steam engine, but in the industrialisation process itself; they had already reached iconic status as tangible representatives of the Industrial Revolution.

There remains a temptation to focus only on the technology of the steam engine itself and not this wider historical and archaeological context. Thus, at least within North-West England, there has been little serious study of coal mining landscapes in the last two decades. This may in part be due to a perceived lack of surviving upstanding monuments from the 18th and 19th centuries; perhaps stemming from the clearance of many colliery sites during the 20th century. Thus, the excavation and survey work of the colliery remains in this part of the Medlock Valley confirms that the archaeology of the Fairbottom Bobs, along with its associated pithead buildings, housing and transport networks, is of regional importance as a mining landscape and serves to remind us that the archaeology of industrialisation is more than just the archaeology of technology, central though that is to the discipline; it is also about landscape and social change (Figure 15).

Notes and References

[1] The Dearborn Museum also has substantial parts of two other Newcomen steam engines, from Windmill End in Staffordshire and Moira Colliery near Ashby-de-la-Zouch, and many more museums have parts and fragments from other such engines. There is a rich literature on the history and technology of the Newcomen steam engine, much of it published in the *Transactions of the Newcomen Society*. See Rolt, L.T.C., *Thomas Newcomen. The Prehistory of the Steam Engine* (Newton Abbot: David & Charles, 1963), 138–41, and Needham, J., 'The Pre-Natal History of the Steam Engine', *Transactions of the Newcomen Society*, 35 (1963), 3–58.

[2] The excavations at Fairbottom Bobs and the excavation of the associated cottages were directed by John Roberts of the University of Manchester Archaeological Unit. Assistance was provided by the Tameside Archaeology Society and the Manchester Region Industrial Archaeology Society. The project was funded by the Heritage Lottery, Oldham MBC and Tameside MBC. The continuing research project on the industrial archaeology of the Park Bridge landscape, of which this site forms a segment, is part of the Tameside Archaeology Survey, and is funded by Tameside MBC. George, D., 1974, 'The Newcomen Steam Engine in Cumberland', *Lancaster University Regional Bulletin* (1974), 9–10.

[3] Trotter, F.M., 'The Lancashire Coalfield', in Truman, A. (ed.), *The Coalfields of Great Britain* (Edward Arnold Publishers Ltd, 1954), 199–218, 199–205.

[4] Crosby, A., *A History of Lancashire* (Phillimore, 1998), 65; Flinn, M.W. with Stoker, D., *The History of the British Coal Industry. Volume 2, 1700–1830: The Industrial Revolution* (Oxford: Clarendon Press, 1984), 121–2; Palmer, M. and Neaverson, P., *Industrial Archaeology. Principles and Practices* (Routledge, 1998), 70–1.

[5] Bowman, W.M., *England in Ashton-under-Lyne* (Ashton-under-Lyne: Ashton-under-Lyne Corporation, 1960), 467–8; Nevell, M. and Roberts, J., *The Park Bridge Ironworks and the archaeology of the Wrought Iron Industry in North West England, 1600 to 1900. Volume 3 in the Archaeology of Tameside Series* (Tameside: Tameside MBC with the University of Manchester Archaeological Unit, 2003), 56–62.

[6] John Rylands Library (JRL — Deansgate, Manchester), Stamford Archives, EGR 4/1/8/2/4.

[7] Bowman, W.M., ref. 5, 468, 471.

[8] JRL, Stamford Archives, EGR 4/1/8/2/2.

[9] Lancashire Record Office (LRO), DDHu 32/3 & 32/4; DDRe 6/7 Fairbottom Coal Company records; DDX 614/19 Fairbottom Coal Company Dividends.

[10] JRL, Stamford Archives, EGR 4/1/8/3/7.

[11] JRL, Stamford Archives, EGR 4/1/6/25/61.

[12] LRO *Ashton Canal Company Minute Books*.

[13] JRL, Stamford Archives, EGR 4/1/8/2/29.

[14] Butterworth, J., *History and Description of the town and parish of Ashton-under-Lyne, Mottram-long-den-dale and Glossop* (Oldham, 1823), 19.

[15] Newton, J.L., 'Some Reminiscences of Bardsley and District', *Ashton Reporter*, 20 February 1904, 27 February 1904, 12 March 1904.

[16] JRL, Stamford Archives, EGR 4/2/7/16/1–9.

[17] Butterworth J., ref. 14, 119.

[18] Sale advert in the *Colliery Guardian*, 8 June 1877, 890.

[19] *Mines Report 1886*, C5132; 1887, C5464.

[20] 'Fairbottom Bobs. Excavations on the site of an 18th century Colliery Pumping Engine' (UMAU 2002; unpublished report).

[21] 'Fairbottom Bobs. Excavations on site of 18th–20th century workers' cottages' (UMAU 2002; unpublished report).

[22] Palmer, M. and Neaverson, P., ref. 4, 9–15.

[23] Nevell, M. and Roberts, J., ref. 5, 80–1.

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